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Report No. CETHA-BC-CR-89046

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U.S. Army Toxic and Hazardous Materials Agency

## Task Order 2 Enhanced Preliminary Assessment

TACONY WAREHOUSE  
PHILADELPHIA, PENNSYLVANIA

Contract Number DAAA15-88-D-0007

December 1989

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Prepared for

U.S. Army Toxic and Hazardous Materials Agency  
Aberdeen Proving Ground, Maryland 21010-5401

Prepared by

**WESTON**

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West Chester,  
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Report No. CETHA-BC-CR-89046

USATHAMA Task Order 2  
ENHANCED PRELIMINARY ASSESSMENT

TACONY WAREHOUSE  
PHILADELPHIA, PENNSYLVANIA

Contract No. DAAA15-88-D-0007

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) An enhanced preliminary assessment was conducted at the Tacony Warehouse (TW) which is planned for inclusion in the Base Closure Program. TW is a 14.2-acre facility along the Delaware River in an industrial section of northeast Philadelphia. TW was built in 1943 an armour plate assembly plant. The facility is currently leased to New Cumberland Army Depot for low activity storage. Based on information obtained during and subsequent to site visits on 21 September and 5 October 1989, the three immediate action recommendations are to remove an abandoned underground storage tank, to remove four 9,000-gallon aboveground tanks, and to dispose of the oil phase in an oil/water separator and trace its inflows and outflows. For the fourteen additional ESOs recommended for a site investigation the primary activities are to leak test the remaining four underground tanks, to install soil borings and piezometers at the property boundaries, at a former spray pond and at the 9,000-gallon tanks, to test electrical equipment for PCBs, and to excavate test pits near a filled area along the river. The objective of the soil boring and piezometer samples is to detect possible contamination from past releases as well as to establish background levels. The test pits will allow direct observation of this unknown fill material to determine if further investigation is necessary.					
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SECURITY CLASSIFICATION OF THIS PAGE

18. Base Closure Program Frankford Arsenal,  
Tacony Warehouse (TW) AAFES  
→ Environmentally Significant Operation (ESO),  
→ Environmental Receptors,  
→ Human Receptors  
→ Sampling

↑  
(IG)

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE



## DISCLAIMER

This Enhanced Preliminary Assessment report is based primarily on the environmental conditions observed at the Tacony Warehouse, Philadelphia, Pennsylvania, on 21 September and 5 October 1989. Past site conditions and management practices were evaluated, based on readily available records and the recollections of people interviewed. Every effort was made, within the scope of the task, to interview all identified site personnel, especially those personnel with a historical perspective of site operations.

No environmental sampling was conducted as part of the assessment. The findings and recommendations for further action are based on WESTON's experience and technical judgment, as well as current regulatory agency requirements. Future regulations as well as any modifications to current statutes may affect the compliance status of this site.

WESTON does not warrant or guarantee that the property is suitable for any particular purpose or certify any areas of the property as "clean." A more thorough investigation, including intrusive sampling and analysis for specific hazardous materials, is recommended prior to reporting this property as excess.

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**EXECUTIVE SUMMARY****BACKGROUND AND OBJECTIVES**

This Enhanced Preliminary Assessment (PA) report has been prepared by Roy F. Weston, Inc. (WESTON) at the request of the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) pursuant to Contract DAAA15-88-D-0007, Task Order 2. The purpose of the PA report is to present WESTON's findings and conclusions concerning the environmental conditions at the Tacony Warehouse (TW) and to provide recommendations for further action.

The objectives of the PA were to:

- Identify and characterize environmentally significant operations (ESOs) associated with the historical and current use of the TW property.
- Identify and characterize possible impacts of the ESOs on the surrounding environment.
- Identify additional environmental actions, if any, that should be implemented for the ESOs identified.

**ENVIRONMENTALLY SIGNIFICANT OPERATIONS**

TW is a 14.2-acre warehouse facility located on the northwest bank of the Delaware River in an industrial section of Northeast Philadelphia. TW was built in 1943 as an armour plate assembly plant. From 1945 to 1966, TW functioned as a storage annex to the Frankford Arsenal. From 1970 until 1987, the Army and Air Force Exchange Service (AAFES) utilized TW as their northeast distribution center for consumer goods. Currently, TW is leased until 1993 to New Cumberland Army Depot for low activity storage.

The primary ESOs on the property, shown in Figure ES-1, include:

- Five underground storage tanks, including one tank abandoned in 1972.
- A former spray pond used in cooling water service for the armour plating operation.
- An oil/water separator (exact source of inflows unknown).
- Four partially full, 9,000-gal capacity, aboveground tanks that are leaking and in poor condition.
- A former manufacturing area, Building 460, that housed welding, cutting, and possibly camouflage painting operations.
- A former materials storage area that may have stored radiological materials.

# ENVIRONMENTALLY SIGNIFICANT OPERATIONS

1. Former Pesticide Storage Building
2. Former Manufacturing Area
3. Abandoned Underground Tank
4. Electrical Switchgear
5. 300-Gallon Above Ground Tanks (3 Locations)
6. Former Spray Pond
7. Former Air Conditioner Condensing Units (2 Locations)
8. North Transformer Substation
9. 10,000-Gallon Underground Tanks (3)
10. Oil/Water Separator
11. Coal Silos (2)
12. 9,000-Gallon Above Ground Tanks (4)
13. Pole-mounted Transformers (2)
14. 1,400-Gallon Underground Tank
15. South Transformer Substation
16. Former Materials Storage Area
17. Hydraulic Oil Leak
18. Former Vehicle Maintenance Area
19. Railroad Bed
20. Fill Area

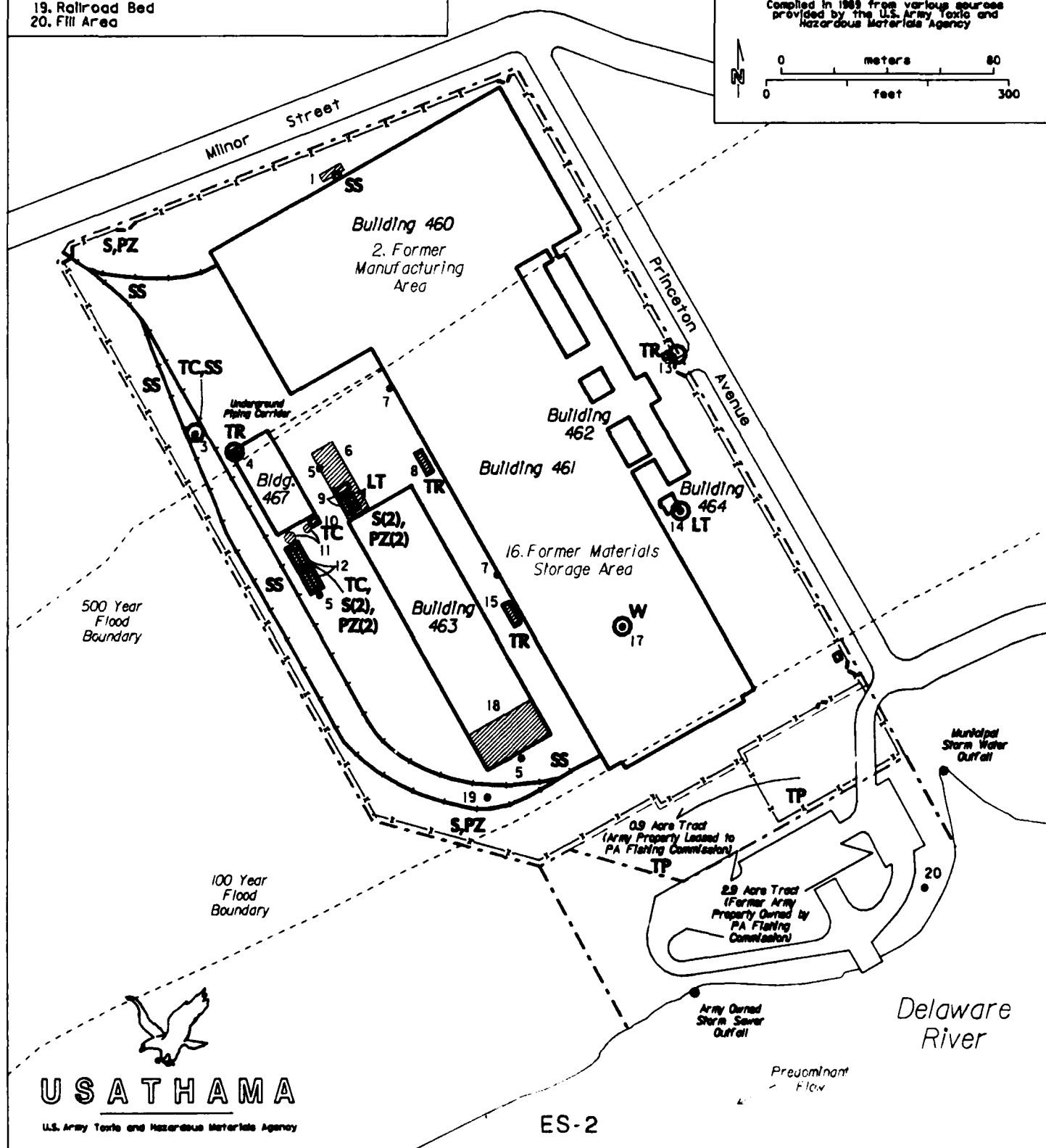
# RECOMMENDED SAMPLING METHODS

- S Soil Boring
- PZ Piezometer (Ground Water Sample)
- SS Surface Soil
- TC Tank Contents
- LT Leak Test
- TR Transformer Sample
- W Wipe
- TP Test Pit

U. S. Army  
Base Closure Preliminary Assessment  
**Tacony Warehouse**  
Philadelphia, PA - November 1989

## Figure ES-1 Property Information Composite

Compiled in 1989 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



- A former pesticide storage building.
- Eight transformers, electrical switchgear, and a spill of conduit fill fluid that may contain polychlorinated biphenyls (PCBs).
- A railroad bed where waste oil was sprayed for weed control.
- A fill area that consists of manmade, reclaimed land along the Delaware River filled in with unknown material between 1950 and 1953. This area was sold to the Pennsylvania Fishing Commission in 1979. A 0.9-acre parcel adjacent to the fill area is still part of the TW property.
- Asbestos contained in steam piping insulation. Siding and other building materials may also contain asbestos.

### **HUMAN AND ENVIRONMENTAL RECEPTORS**

Inhalation of airborne asbestos fibers by employees at TW appears to present the most significant exposure risk.

TW's stormwater sewer system discharges to the Delaware River, which would have been the primary pathway of any past spills into the environment. This section of the river is used for fishing and recreation.

No impact on human or environmental receptors from groundwater is expected because of the groundwater flow direction (toward the river) and the absence of groundwater users.

### **CONCLUSIONS AND RECOMMENDATIONS**

Table ES-1 summarizes the ESOs identified at TW and the recommended action for each ESO.

It is recommended that sampling of the contents of the abandoned underground storage tanks, the oil/water separator, and the four aboveground tanks be conducted as an immediate action. It is also recommended that the tanks and their contents be disposed.

Other agencies interested in the site investigation sampling results are Ft. Dix, TW's support installation which had scheduled TW for asbestos sampling in fiscal year 1990, and the Pennsylvania Fishing Commission, which has an active interest in acquiring the 0.9-acre plot that it currently leases along the southern boundary of TW.

Table ES-1

ESOs Identified at Tacony Warehouse  
and Recommendations for Further Action

ESO	Action	Recommended Activity	Analysis	Number of Samples Recommended	Location/ Type of Samples
Abandoned Underground Tank	Immediate action and site investigation	Liquid disposal, tank removal, and sampling	TPH <sup>a</sup> , VOCs <sup>b</sup> , BTX <sup>c</sup> , semi-volatiles	2	Soil underlying tank and tank contents
1,400-gal Underground Tank	Site investigation	Leak test	Only if leaking	—	—
10,000-gal Underground Tanks (3)	Site investigation	Leak test	Only if leaking	—	—
Former Spray Pond	Site investigation	Sample subsurface and groundwater	TPH, VOCs, RCRA metals <sup>d</sup>	4	Soil boring/piezometer south of former pond area
Oil/Water Separator	Immediate action and site investigation	Liquid disposal and source determination by dye test	TPH, RCRA metals, total halogens	1	Oil phase of waste liquid
9,000-gal Aboveground Tanks (4)	Immediate action and site investigation	Liquid disposal and tank removal	TPH	10	Soil boring/piezometer on both sides of the south wall, tank contents (4), and standing liquid (2)
300-gal Aboveground Tanks	No further investigation	—	—	—	—
Former Manufacturing Area (Building 460)	Site investigation	Sample subsurface soil and groundwater	TPH, VOCs, RCRA metals	4	Soil boring/piezometer on both sides of the south property boundary
Former Material Storage Area	Site investigation	Geiger counter sweep	Radioactivity	N/A	Interior of Buildings 460/461 surfaces including basements

<sup>a</sup>Total Petroleum Hydrocarbons.

<sup>b</sup>Volatile Organic Compounds.

<sup>c</sup>Benzene, toluene, xylene, ethyl benzene.

<sup>d</sup>Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.  
— = Not applicable.

Table ES-1

ESOs Identified at Tacony Warehouse  
and Recommendations for Further Action  
(continued)

ESO	Action	Recommended Activity	Analysis	Number of Samples Recommended	Location/ Type of Samples
Former Pesticide Storage Building	Site investigation	Sample	Organochlorine, organophospho- rous, phenoxy acid herbicides	1	Sediment in floor drain
Former Vehicle Maintenance Area	No further investigation	—	—	—	—
North Transformer Substation	Site investigation	Sample	PCBs	3	Fill fluid
South Transformer Substation	Site investigation	Sample	PCBs	4	Fill fluid and leaking conduit
Electrical Switchgear (Building 467)	Site investigation	Sample	PCBs	2	Fill fluid
Pole-Mounted Transformers	Site investigation	Sample	PCBs	2	Fill fluid
Hydraulic Oil Leak	Site investigation	Sample Spill	PCBs	1	Wipe sample of spill
Railroad Bed	Site investigation	Sample Soil	TPH, PCBs, RCRA metals	4	Surface soil (0-6 in.) along railroad
Fill Area	Site investigation	Test pits (2)	To be determined	—	0.9-acre leased tract
Asbestos	Site investigation	Sample	Asbestos	24	Ambient air in base- ments and steam plant; steam pipe and tank insulation; boilers and flues; siding; ceiling and floor tile

<sup>a</sup>Total Petroleum Hydrocarbons.

<sup>b</sup>Volatile Organic Compounds.

<sup>c</sup>Benzene, toluene, xylene, ethyl benzene.

<sup>d</sup>Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.  
— = Not applicable.

## **SECTION 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND**

Roy F. Weston, Inc. (WESTON) has been retained by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) to conduct waste site characterizations of specific Department of Army properties under the authority of Contract DAAA15-88-D-0007, Task Order 2. This work is being performed within the scope of the U.S. Army Installation Restoration Program (IRP). As part of this contract, WESTON has also been asked to prepare enhanced preliminary assessment (PA) reports of selected properties destined to be included as part of the Base Closure Program. The purpose of these reports is to present WESTON's findings as to the environmental conditions at the properties and to provide recommendations for further action. These recommendations will serve as a guide to the U.S. Army in prioritizing the activities required to enable the properties to be reported as excess.

This report discusses the enhanced preliminary assessment of Tacony Warehouse (TW) located in Philadelphia, Pennsylvania. The site was visited on two occasions, 21 September and 5 October 1989.

#### **1.2 OBJECTIVES**

This enhanced PA report was prepared using existing information obtained from property records and from both current and former employees. No sampling activities were completed as part of this assessment.

The objectives of the PA were as follows:

- Identify and characterize environmentally significant operations (ESOs) associated with the historical and current use of the TW property.
- Identify and characterize possible impacts of the ESOs on the surrounding environment.
- Identify additional environmental actions, if any, that should be implemented for the ESOs identified.

Certain issues have been excluded from consideration as ESOs for the purposes of this report. First, painted surfaces will not be identified as ESOs solely because there is a potential for their containing lead. Second, drinking water will not be designated as an ESO solely because there is a potential for lead contamination due to piping solder or piping materials. Third, the presence of radon gas in buildings will not be considered as an ESO. A radon survey of all buildings will be performed utilizing the guidelines set forth in the Army Radon Program.

### **1.3 PROCEDURES**

The information contained in this PA report is based on the following data-gathering activities:

- Visual inspection of the facility.
- Review of available Army documentation.
- Review of U.S. Environmental Protection Agency (EPA) Region III files.
- Review of the Pennsylvania Department of Environmental Resources files.
- Telephone and written correspondence with various other regulatory agencies.
- Telephone interviews with former employees at TW.

No sampling or analysis was conducted as part of the investigation.

### **1.4 REPORT FORMAT**

This enhanced PA report presents an evaluation of the relevant data for the TW site.

Section 2 describes the property and the surrounding environment and land uses. Section 3 identifies and characterizes all environmentally significant operations related to known and suspected releases to the environment. The potential impact of these operations on the local environment and human receptors is discussed in Section 4. Section 5 summarizes the findings and conclusions, discusses the quality and reliability of the supporting information, identifies areas requiring further action, and suggests how such actions may be accomplished. Section 6 lists the pertinent materials reviewed and the agencies that were contacted. Photographs of the items that were investigated for this assessment are provided in Section 7. Supporting documentation is provided in Appendices A and B.

References are presented throughout this report, where appropriate, by means of a letter and number designation in brackets, as follows: I refers to direct interviews; T refers to telephone interviews; and R refers to reports or other written documents. The number following the letter refers to the specific item in the respective lists provided in Section 6.



**SECTION 2****PROPERTY CHARACTERIZATION****2.1 GENERAL PROPERTY INFORMATION**

TW, also known as the USA & AF Exchange Warehouse on the Army Real Property list, is located on the northwest bank of the Delaware River in the Tacony section of Philadelphia, Pennsylvania. An area map and a property information summary are presented in Figure 2-1 and Table 2-1, respectively.

TW comprises 14.2 acres, which includes a 0.9-acre parcel leased to the Pennsylvania Fishing Commission for parking along the south side of the property [R-4]. The 2.9-acre parcel immediately adjacent to the river was once part of the TW property, but was conveyed by quit claim deed to the Pennsylvania Fishing Commission on 29 March 1979 for use as a recreational boat launch [R-4]. A site map of TW is shown in Figure 2-2.

**2.2 HISTORY AND DESCRIPTION OF FACILITIES**

TW was established as an armour plate assembly plant in 1943 on land purchased from the Warner Company, which at that time also owned and operated the concrete plant on the adjacent property [T-13]. The newly constructed plant was operated by Henry Disston & Sons Co. until control was transferred to the Frankford Arsenal on 25 April 1944 [R-4]. Frankford Arsenal, located 2 miles to the southwest, actively used TW for storage in the 1950s and throughout much of the 1960s.

In 1966, TW was reported as excess. No resolution of the excess condition was made until 12 November 1970 when TW was assigned to the Army & Air Force Exchange Service (AAFES) while retaining accountability to the Frankford Arsenal [R-4]. AAFES utilized the warehouse for storing consumer products (e.g., clothing, housewares, and automotive equipment). Although motor oil and antifreeze were stored at TW, the containers within the pallets were never larger than 1 gal and any damaged cans were quickly contained for use onsite. On 24 June 1976, accountability for TW was transferred to Fort Dix pending the closure of the Frankford Arsenal. AAFES vacated the facility on 23 November 1987 [R-4]. TW remained vacant for four months until the New Cumberland Army Depot entered into an agreement with Fort Dix, which expires 21 April 1993, to use TW for the storage of items such as unused containers, office furniture, and spare equipment parts (photo 1). TW history is presented as a timeline in Table 2-2.

Because of the multiple periods of inactivity and transfers of administrative accountability, relatively little is known about TW prior to the AAFES occupancy in 1970. Virtually no documentation has survived, and individuals who may have had detailed knowledge of the facility's operations before 1970 could not be contacted. A list of such individuals is included in Subsection 6.4.

**U.S. Army  
Base Closure Preliminary Assessment  
Tacony Warehouse  
Philadelphia, Pennsylvania — November 1989**

**FIGURE 2-1  
PROPERTY LOCATION**

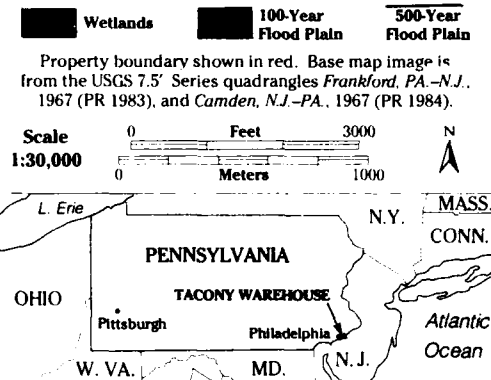


Table 2-1

Property Information Summary

---

Name: Tacony Warehouse

Facility Address: 5100 Princeton Avenue  
Philadelphia, PA 19135

Property No.: 42246

Command: TRADOC

County: Philadelphia  
(City Real Estate Plan: #116N7-4)

Installation Coordinates: 40°01'18"N; 75°02'07"W

Support Facility: Fort Dix

Size: 14.2 acres

Mission: TW was an armour plate assembly plant during World War II. Following the war, TW was an annex to the Frankford Arsenal used primarily for storage. From 1970 until 1987, AAFES used TW as a regional warehouse.

Operations: Currently used by New Cumberland Army Depot as a low activity storage annex.

Environmental Contact: Carleen Arrington  
(609)562-3191  
Environmental & Natural  
Resources Division  
Attention: ATZD-EHN  
Fort Dix, NJ 08640

Operational Contact: John Price  
(717)770-6397  
Directorate of Supply  
Attn: SDSNC-TT-MOD-PF  
New Cumberland Army Depot  
New Cumberland, PA 17070-5001

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**Figure 2-2**  
**Site Plan**

Compiled in 1989 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency

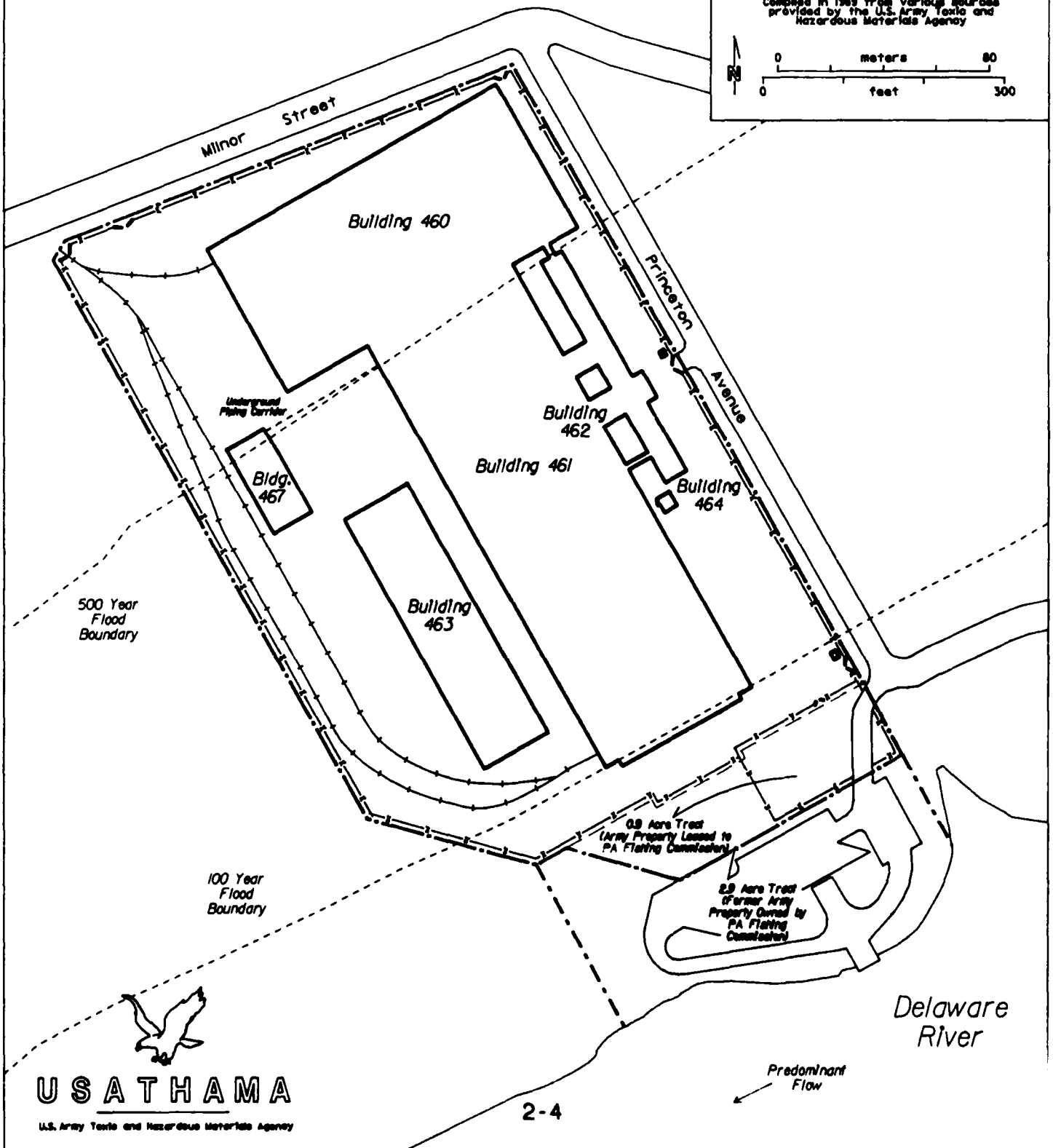


Table 2-2

## History of Tacony Warehouse

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September 1943	Land purchased from Warner Company by U.S. Government for the construction of an armour plate plant to be operated by Henry Disston & Sons Co.
April 1944	Transferred by Philadelphia Ordnance District to the Frankford Arsenal.
1945 to 1966	Operated as an annex to Frankford Arsenal. Primary function was storage.
1950 to 1953	Fill area created along Delaware River.
1966	Reported to Government Services Agency as excess.
November 1970	Removed from excess and assigned to AAFES (Army/Air Forces Exchange Service) as a warehouse for consumer products.
December 1975	Second report of excess initiated pending the closure of Frankford Arsenal.
June 1976	Accountability transferred to Fort Dix.
March 1979	A 2.9-acre parcel along Delaware River conveyed to Pennsylvania Fishing Commission. A 0.9-acre parcel leased to the Commission.
November 1987	AAFES vacated entire facility.
March 1988	Leased to New Cumberland Army Depot through April 1993 via ISSA (interservice agreement) with Fort Dix, New Jersey.
April 1989	Preliminary excessing action submitted under Base Closure Realignment Action.

---

Information about TW's early history indicates that it was fairly active from its founding until at least 1966. Aerial photographs taken during this period consistently show approximately 50 parked cars and materials stored outdoors, including, in the early 1950s, military tanks [R-2; T-7]. Activity at TW during World War II is believed to have included welding, cutting [T-17], and possibly camouflage painting [T-15] of armour brought into the plant by rail [T-15]. Manufacturing activities may have continued on a reduced scale after 1944, since the spray pond used in cooling armour is still visible in aerial photographs from the 1960s. However, Frankford Arsenal employees who were interviewed believed that little production occurred at TW even during wartime and were unaware of any operations besides warehousing [T-9, T-10, T-11] and possibly military tank maintenance [T-7].

As of the writing of this report, active materials handling is scheduled by New Cumberland Army Depot for one or two days per week. The property was connected to the municipal sanitary sewer in the past, but the connection is not currently used. Property security is provided by a 9-ft perimeter fence and round-the-clock guard service from Firm Security, Inc. The wood frame buildings, Buildings 462, 464, and 463, pose the highest fire hazard potential. The sprinkler system in Buildings 460 and 461 of the main warehouse is in good condition. Fire walls have been constructed between the inactive Building 462 and the main warehouse.

## **2.3 PERMITTING STATUS**

The only permit applicable to TW is a license to operate equipment venting to the atmosphere from the Philadelphia Department of Public Health issued on 29 December 1971 for a 100-hp natural gas-fired boiler installed in 1958 in Building 460 [R-15]. This boiler is now out of service. Regulatory agencies whose files were reviewed are listed in Section 6 [I-3; T-4, T-12, T-17; R-1, R-11.].

## **2.4 GENERAL ENVIRONMENTAL INFORMATION**

### **2.4.1 DEMOGRAPHICS AND LAND USE**

TW is located along the industrial riverfront in Northeast Philadelphia. As described previously, TW is bordered on the west by a concrete plant and on the south by a recreational boat launch. TW is bounded on the north by Interstate Highway 95, beyond which lies the densely populated working-class residential neighborhood of Tacony. St. Vincent's Home, an orphanage, is located 1,000 ft to the east. Downriver to the southwest (2.5 miles) is a major municipal sewage treatment plant. Major industries in the immediate vicinity include Ralston Purina, an animal feed processor, and Disston Precision, a metal working facility.

### **2.4.2 CLIMATE**

The climate of Philadelphia is determined by the following features:

- Prevailing westerly winds.

- Proximity to the Atlantic Ocean.
- Proximity to the Appalachian Mountains.

Philadelphia has a humid, continental-type climate. Prevailing westerly winds carry weather disturbances from the interior of the continent, while the Atlantic Ocean acts as a moderating influence on many of these storms.

Figure 2-3 is a wind rose for Philadelphia for the year 1988. The prevailing winds show a seasonal variation. In the winter, the prevailing winds are from a northwesterly direction. During the summer the prevailing winds are from a southwesterly direction. The normal annual prevailing direction is from the west-southwest. During 1988, west winds occurred most frequently with a secondary maximum of southwest winds.

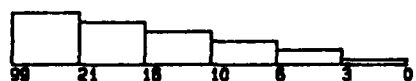
Precipitation is evenly distributed throughout the year with maximum amounts occurring during the spring and late summer months. Normal yearly precipitation is 41.42 in. August is the wettest month with 4.10 in., and February is the driest month with normal precipitation of 2.81 in. The majority of summer rainfall occurs as a result of showers and thunder-showers. During the rest of the year, storm systems from the interior of the continent and coastal storms produce the majority of the precipitation. Coastal storms produce heavy rains during warm months and heavy snow or a mixture of rain and snow during winter months. Average yearly snowfall is 21.6 in. The 24-hr maximum snowfall recorded was 21.3 in. during February 1983.

Temperatures generally remain between 0°F and 100°F and average 54.6 annually. Temperatures above 100°F or below 0°F occur rarely. Temperatures vary (moderately) from season to season. The coldest month is January with a normal temperature of 31.2°, and the warmest month is July with an average temperature of 76.5°F. Temperatures above 90°F occur 15 to 25 days per year, although there have been occurrences of 30 days or more. During the summer months, episodes of high humidity add to the discomfort of the high temperatures. Because of the blocking effect of the Appalachian Mountains to the west and the moderating effect of the Atlantic Ocean to the east, periods of very high or very low temperatures seldom last longer than three or four days.

Hurricanes or low pressure systems with a tropical origin seldom affect Philadelphia. Damage from tropical storms is rare, but damage has occurred from flooding associated with these storms. Tornadoes are not a common occurrence in Philadelphia, but when they have occurred, they have caused relatively minor damage. Coastal storms or "northeaster's" can produce high winds and heavy rain or snow. Some thunderstorms can be severe and produce heavy rain, high winds, and hail, causing minor damage.

### **2.4.3 SURFACE WATER AND PHYSIOGRAPHY**

The Delaware River flows past TW in a predominantly southwesterly direction, but the flow direction reverses with the tide. The river is used for



SCALE (KNOTS)

	WIND SPEED (KNOTS)			PERCENT OCCURRENCE				WIND SPEED (KNOTS)			PERCENT OCCURRENCE		
	0-3	3-6	6-10	10-16	16-21	>21		0-3	3-6	6-10	10-16	16-21	>21
N	0.26	2.40	3.23	1.09	0.10	0.00	S	0.57	2.68	3.10	1.62	0.17	0.02
NNE	0.12	0.39	0.91	0.82	0.02	0.00	SSW	0.31	1.49	2.03	1.36	0.14	0.00
NE	0.11	0.34	0.52	0.47	0.10	0.00	SW	0.35	2.90	5.27	2.40	0.13	0.00
ENE	0.11	0.91	1.84	1.12	0.27	0.00	WSW	0.57	4.25	3.83	1.12	0.00	0.00
E	0.20	1.37	1.92	0.96	0.18	0.01	W	0.89	4.06	4.78	3.03	0.39	0.01
ESE	0.27	1.29	1.00	0.34	0.00	0.00	WNW	0.30	1.88	2.96	4.16	0.87	0.22
SE	0.29	1.18	0.90	0.30	0.00	0.01	NW	0.36	1.79	2.14	2.41	0.43	0.07
SSE	0.39	1.53	1.02	0.36	0.01	0.00	NNW	0.32	1.74	1.98	1.68	0.26	0.00

2-8



recreational, commercial, and industrial activity. A large portion of Philadelphia's drinking water is drawn from the Delaware River nearly 2 miles upstream of TW [T-17]. The stormwater runoff from TW is collected by an Army-owned, 2-ft diameter storm sewer system. The TW storm sewer discharge point into the Delaware River is on a direct line with the east edge of Building 463 [R-2] and can be observed only by performing a dye test at low tide [T-18].

Another storm sewer, which receives a small amount of runoff from TW's extreme east edge, runs down the center of Princeton Avenue to its outfall at the river. No surface water bodies are present within the facility boundaries. The area south of Building 461's southern edge falls within the 100-year floodplain [R-10]. Floodplain boundaries are shown in Figure 2-1 and in Figure 2-2.

TW lies in the physiographic province of the Coastal Plain, a strip of flat lowlands along the Delaware River. The topography makes an abrupt transition to the rolling hills of the Piedmont province an eighth of a mile north of the facility.

#### **2.4.4 SOILS**

The U.S. Soil Conservation Service describes the area around TW simply as urban land. Most areas have been regraded or filled, and the original soil material has been disturbed and filled over [R-13]. Soil boring logs (Appendix B) from a site less than one mile east of TW reveal the soils to be variable, but characterized by firm sand and gravel with some clay [R-5]. The limited amount of visible surface soil (almost all surrounding areas are paved with concrete) is sandy with some silt and small particles of brick.

The geology underlying TW can be described as Quaternary and Cretaceous sediments overlying a base of early Paleozoic rock. Bedrock is comprised of pre-Cretaceous mica schist and is overlain by unconsolidated sand, gravel, silt and clay of Cretaceous age.

#### **2.4.5 GROUNDWATER AND HYDROLOGY**

All groundwater flows southwest towards the river. The water table is 5 to 14 ft below the surface. The depth to groundwater and flow direction are influenced by the tidal nature of the river.

#### **2.4.6 SENSITIVE ENVIRONMENT**

The area surrounding TW consists primarily of urban, industrially-zoned land. No endangered or threatened species are recorded on TW, nor would any be expected in this environment, although peregrine falcons have been recently observed in the vicinity. The TW property itself contains no wetlands. The southeastern corner of the property is adjacent to an area identified as wetlands by the Pennsylvania Department of Environmental Resources [R-11]. This area and other wetlands in the vicinity are delineated in Figure 2-1.

**SECTION 3****ENVIRONMENTALLY SIGNIFICANT OPERATIONS**

The primary ESOs on the TW property, shown in Figure 3-1, include:

- Five underground storage tanks including one tank abandoned in 1972.
- A former spray pond used in cooling water service for the armour plating operation.
- An oil/water separator (exact source of inflows unknown).
- Four partially full, 9,000-gal capacity, aboveground tanks that are leaking and in poor condition.
- A former manufacturing area, Building 460, that housed welding, cutting, and possibly camouflage painting operations.
- A former materials storage area that may have stored radiological materials.
- A former pesticide storage building.
- A railroad bed where waste oil was sprayed as weed control.
- Eight transformers, electrical switchgear, and a spill of conduit fill fluid that may contain PCBs.
- A fill area that consists of manmade, reclaimed land along the Delaware River filled in with unknown material between 1950 and 1953. This area was sold to the Pennsylvania Fishing Commission in 1979. A 0.9-acre parcel adjacent to the fill area is still part of the TW property.
- Asbestos contained in steam piping insulation. Siding and other building materials may also contain asbestos.

**3.1 UNDERGROUND STORAGE TANKS**

A list of critical information for the five underground storage tanks at TW is presented in Table 3-1.

**3.1.1 DESCRIPTION**

An abandoned underground storage tank is located northwest of Building 467 in between the railroad tracks. A gasoline or diesel fuel pump at this location is believed to have been actively used until 1972, when underground tanks were installed elsewhere. The dispensing pump was removed [T-18]. The age

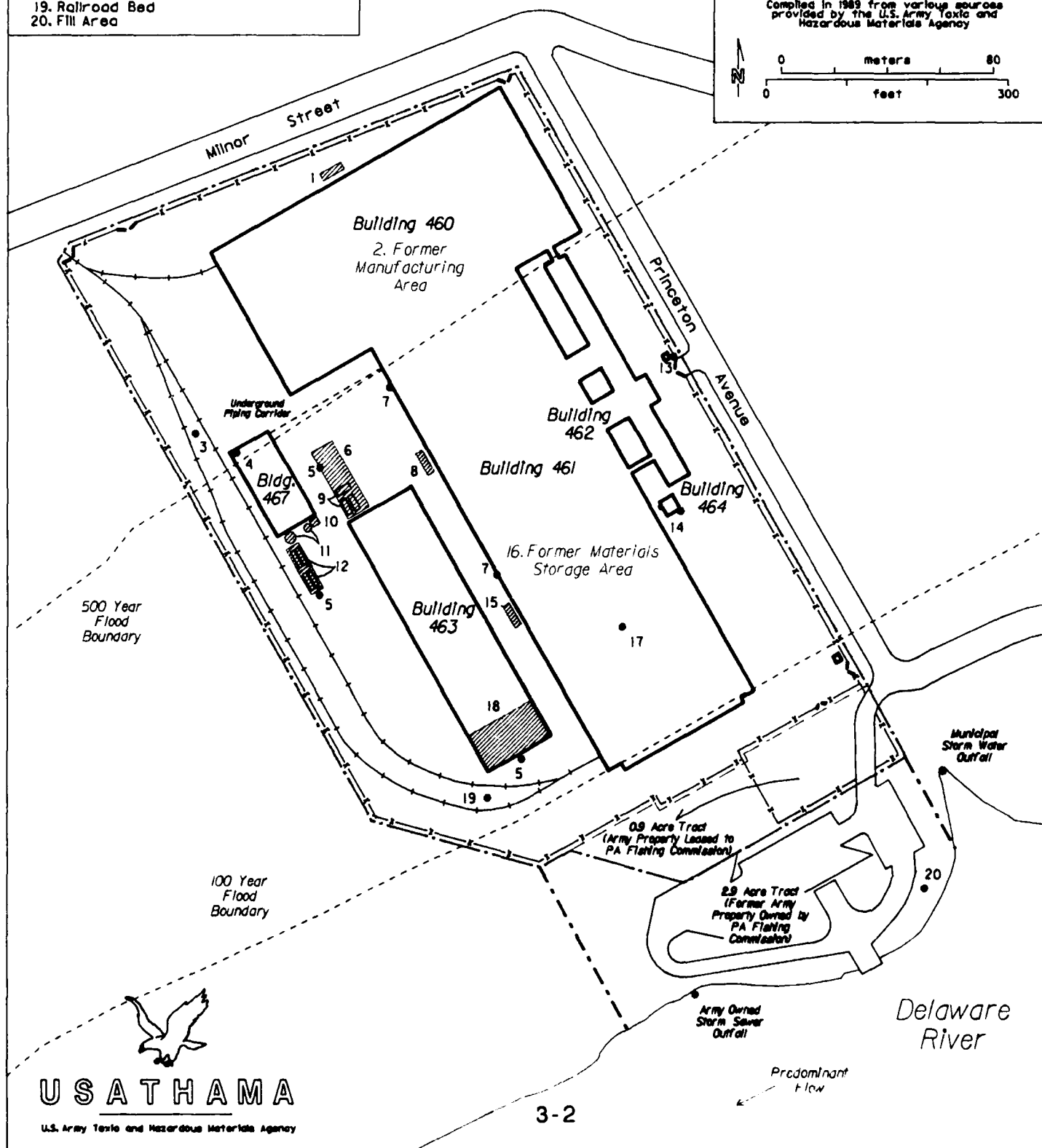
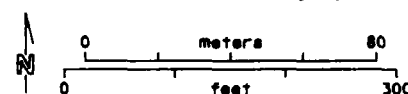
# ENVIRONMENTALLY SIGNIFICANT OPERATIONS

1. Former Pesticide Storage Building
2. Former Manufacturing Area
3. Abandoned Underground Tank
4. Electrical Switchgear
5. 300-Gallon Above Ground Tanks (3 Locations)
6. Former Spray Pond
7. Former Air Conditioner Condensing Units (2 Locations)
8. North Transformer Substation
9. 10,000-Gallon Underground Tanks (3)
10. Oil/Water Separator
11. Coal Silos (2)
12. 9,000-Gallon Above Ground Tanks (4)
13. Pole-mounted Transformers (2)
14. 1,400-Gallon Underground Tank
15. South Transformer Substation
16. Former Materials Storage Area
17. Hydraulic Oil Leak
18. Former Vehicle Maintenance Area
19. Railroad Bed
20. Fill Area

U. S. Army  
Base Closure Preliminary Assessment  
**Tacony Warehouse**  
Philadelphia, PA - November 1989

## Figure 3-1 Environmentally Significant Operations

Compiled in 1989 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

Table 3-1

Underground Storage Tanks  
Tacony Warehouse

Tank Capacity (gal)	Reference Number in Figure ES-1	Contents	Current Volume	Material of Construction	Installation Date
Unknown	3	Gasoline or diesel fuel	Estimated 50 to 500 gal	Unknown	Unknown (abandoned in 1972)
10,000	9	Diesel fuel	Possible residual	Fiberglass, single wall	1972
10,000	9	Gasoline, later diesel fuel	Possible residual	Fiberglass, single wall	1972
10,000	9	No. 2 heating fuel	Possible residual	Fiberglass, single wall	1974
1,400	14	No. 2 heating fuel	Possible residual	Unknown	1943

and capacity of this tank are unknown. The tank's fill pipe protrudes 2 ft above the ground surface at a 70° angle and is covered with a loose fitting cap. A measuring stick inserted into the tank showed a liquid level of approximately 5 in. and encountered an obstruction at a depth of 14 in. below the ground surface. The liquid had a petroleum odor. This tank feasibly could have been used for liquid waste disposal. The obstruction may have been sand used to fill the tank after abandonment.

A 1,400-gal capacity underground tank was installed south of Building 464 in 1943. It contained No. 2 heating oil until 1987 [R-8]. The tank has not been leak tested during the 1970s or 1980s [T-8] and is believed to currently contain only residual amounts of heating oil [R-8].

Three 10,000-gal capacity fiberglass tanks are buried inside the former spray pond [T-8; R-15]. The two southernmost tanks (photo 2) were installed in 1972 and originally contained diesel fuel and gasoline. The easternmost tank was switched from gasoline to diesel service in 1987. The northernmost tank (photo 3) was installed in 1974 and contained No. 2 heating oil. This tank has underground piping leading to the boiler room in the southwest portion of Building 460. These tanks have not been leak tested since their installation [T-8] and are believed to contain only residual amounts of fuel [R-8].

### **3.1.2 KNOWN AND SUSPECTED RELEASES**

Leaks could have occurred in the underground tanks or in their piping. Any materials that leaked would likely have entered the groundwater and, possibly, the Delaware River, except for the three fiberglass tanks from which leaks would likely be contained within the former spray pond. Ground surface staining from minor spills is evident at each tank (photo 4).

## **3.2 FORMER SPRAY POND**

### **3.2.1 DESCRIPTION**

The former spray pond east of Building 467, which is believed to have been concrete lined [T-8], was part of a cooling water process. The cooling water was used to cool an oil bath into which hot armour plates were immersed [T-9]. The pond was filled in with soil between 1962 and 1970 [R-2]. The pond capacity is estimated to have been roughly 200,000 gal of cooling water.

### **3.2.2 KNOWN AND SUSPECTED RELEASES**

Water in the former spray pond may have been contaminated with trace quantities of oil from the armour cooling. Pond discharge practices, as well as the composition of the oil, are unknown.

### **3.3 OIL/WATER SEPARATOR**

#### **3.3.1 DESCRIPTION**

An underground oil/water separator, covered by a massive steel plate, is located south of Building 467. A 4-in. inlet pipe enters the separator from the east side. It is believed to have been used for weekly boiler blowdown [T-8]. The boilers have been inactive since before 1970. The oil/water separator could also have been used for the discharge from the spray ponds. An oil phase is still visible in the first chamber of the separator.

#### **3.3.2 KNOWN AND SUSPECTED RELEASES**

Based on its location, it is possible that the oil/water separator drains to the storm sewer. Past oil collection and disposal practices are unknown.

### **3.4 9,000-GAL ABOVEGROUND TANKS**

#### **3.4.1 DESCRIPTION**

Four 9,000-gal capacity aboveground tanks, partially full of No. 6 heating oil [T-8], are located south of the steam plant, Building 467 (photos 5 and 6). The two northernmost tanks were installed in 1943. Aerial photographs indicate that the two southernmost tanks were installed between 1950 and 1953. The installation of these last two tanks corresponds with the approximate date of the conversion of the steam boilers from coal or oil to exclusively oil fuel. These tanks and the boilers they served have been out of service since before 1970. The tanks are mounted above a concrete surface and surrounded by a 4-ft high concrete wall. Rainwater and any leakage from the tanks are believed to drain into the surrounding concrete through holes along the base of the wall [T-8]. The surrounding walls are intended to provide protection from vehicle traffic, not secondary containment.

#### **3.4.2 KNOWN AND SUSPECTED RELEASES**

All four tanks and their respective piping are in poor condition. Oily rainwater and oil staining were observed around the tanks. Staining appears to be contained within the concrete walls. Leakage is especially noticeable inside the northernmost set of concrete walls, which contained oily standing water 6 in. deep. The drainage pathway and condition of the surface in the walled area are not known. The likely migration route of any spill is to the river via the storm sewer.

### **3.5 FORMER ABOVEGROUND TANKS**

#### **3.5.1 DESCRIPTION**

At various times during the period 1970 to 1987, 300-gal capacity tanks were used to store gasoline or kerosene in three locations at TW. One completely empty tank marked "GAS" is currently mounted on the wall surrounding the 10,000-gal underground tanks. A similar sized tank was located on a concrete-paved area near the former vehicle maintenance area and near the 9,000-gal tanks [T-18].

The footings at the bottom of the two basement stairwells west of Building 461 (photo 7), which appear to be remnants from previous tanks, are in fact part of previously removed air conditioning condenser units [T-8].

### **3.5.2 KNOWN AND SUSPECTED RELEASES**

Moderate staining, typical of fuel transfer operations, is evident near the outlet valve of the gasoline tank. No staining was observed in either former location of the kerosene tank.

## **3.6 FORMER MANUFACTURING AREA**

### **3.6.1 DESCRIPTION**

Building 460 is believed to be the area in which the armour plate assembly was carried out [T-18]. Essentially, nothing is known about the manufacturing process at TW except that the armour plates were brought in by rail to the west end of Building 460 and the operations included welding, cutting, and possibly camouflage painting. The oxygen and acetylene piping formerly used by the welders is still present. This piping, which has been purged of its former contents, extends to the north basement of Building 461, which formerly housed the oxygen and acetylene tanks [T-18]. No other traces of past manufacturing activity, such as paint booths, have been observed, although an oil bath is believed to have been present.

Frankford Arsenal, TW's support installation until 1976, was storing in excess of 100,000 lbs of depleted uranium, as well as other radiological materials, at the time of its preliminary assessment in 1977 [R-12]. It is not known if TW stored radiological materials at any time. If these materials were stored at TW, the most likely location would be the main warehouse, Buildings 460/461.

### **3.6.2 KNOWN AND SUSPECTED RELEASES**

There is no evidence of any spills in this area. Many types of camouflage paint contained heavy metals (including lead, cadmium, and chromium) and solvents both of which have a high persistence in soils. Because most of the surface area of TW is believed to have always been paved, the primary pathway of any potential spills or waste disposal would have been to the river via the storm sewer.

## **3.7 HYDRAULIC OIL LEAK**

### **3.7.1 DESCRIPTION**

Spilled hydraulic oil covering roughly 150 sq ft was observed near the freight elevator in the basement in the southern end of Building 461. The quantity and composition of the oil that produced this stain is unknown.

### **3.7.2 KNOWN AND SUSPECTED RELEASES**

The sump pump for the south basement in Building 461 discharges to the storm sewer.

## **3.8 FORMER PESTICIDE STORAGE BUILDING**

### **3.8.1 DESCRIPTION**

The former pesticide storage building, located north of Building 460, was used to store pesticides (such as chlordane), herbicides, and rodenticides from 1970 to 1987 [T-8]. The concrete, curbed floor in this masonry building is in good condition. The floor appears to drain to the storm sewer, although the drain grate is filled with dirt. This building originally housed transformers, which are discussed in Subsection 3.9.

### **3.8.2 KNOWN AND SUSPECTED RELEASES**

Any spill would have likely been flushed with water to the floor drain with its subsequent release to the Delaware River via the storm sewer.

## **3.9 ELECTRICAL EQUIPMENT**

### **3.9.1 DESCRIPTION**

Polychlorinated biphenyls (PCBs) could potentially be present in four locations: the north transformer substation, the south transformer substation, the electrical switchgear on the upper floor of Building 467, and two pole-mounted transformers above the sentry station along Princeton Avenue. The electrical equipment in all four locations is currently in use and owned by the Army [I-1].

The north transformer substation has three pad-mounted transformers, manufactured by General Electric, each containing 182 gal of oil. The manufacturer has reported that these transformers were manufactured in 1942 and did not originally contain PCBs [T-2]. In the early 1980s the dielectric fluid in these transformers was refilled by a contractor [T-18]. The disposal route of the initial transformer oil is not known. No analyses of PCBs were performed. The transformer substation building has a concrete floor with curbs and a floor drain, which appears to lead to the storm sewer.

The south transformer substation is identical to the north except that the transformers were manufactured by Kuhlman Electric Company. The manufacturer determined that these three transformers were also manufactured in 1942 and did not originally contain PCBs [T-1]. Like the north substation, these units were refilled in the early 1980s.

A conduit leading from the south substation leaked approximately 5 gal of tar-like material onto the exterior wall and concrete surface where the conduit enters Building 461. This conduit fluid spill, which has not been cleaned up, may contain PCBs, although it is separate from the transformer oil.



Most of the electrical switchgear in Building 467 has no dielectric fluid. The switchgear that is oil filled was refilled with a small quantity totalling less than 30 gal at the same time as the transformers described above [T-18].

Two pole-mounted transformers above the north sentry station along Princeton Avenue (photo 8) are suspected to contain PCBs based on their appearance and apparent age.

The pesticide storage building, discussed previously, was originally a transformer substation identical to the north substation. The transformers were removed from this location sometime prior to 1970 [T-8]; their disposal route is unknown.

### **3.9.2 KNOWN AND SUSPECTED RELEASES**

The leaking tar-like material at the south transformer substation has not migrated beyond the concrete surface. No other leaks or spills were identified.

## **3.10 FORMER VEHICLE MAINTENANCE AREA**

### **3.10.1 DESCRIPTION**

The former maintenance area located on the southern end of Building 463 was used for maintenance on the fleet of tractor trailers and fork-lift trucks [T-7]. Most vehicle maintenance after 1970 was performed off-post by a contractor except for a short period in the 1980s [T-8]. Another former maintenance shop is located in the northwest corner of Building 467. Reportedly, no environmentally significant wastes were generated at the second location, and no parts-cleaning solvents have been stored or used at TW since 1970 [T-8].

### **3.10.2 KNOWN AND SUSPECTED RELEASES**

The concrete floor in the former maintenance area in Building 463 is moderately stained with what is believed to be hydraulic oil and motor oil. No staining was observed in the surrounding concrete areas.

## **3.11 RAILROAD BED**

### **3.11.1 DESCRIPTION**

The railroad tracks at TW are located on the western portion of the property. They run from the northwest corner of the property into the western end of Building 460 and the southern end of Building 461. Materials known to have been transported by rail include armour plate, AAFES incoming shipments of consumer products, and coal which is still observable scattered along the railroad bed.

### **3.11.2 KNOWN AND SUSPECTED RELEASES**

Waste oil was sprayed on the railroad bed to control weeds from 1970-1975 [T-8]. The quantity of oil sprayed is unknown.

The area surrounding both delivery bays is paved with concrete and has no evidence of spills.

### **3.12 FILL AREA**

#### **3.12.1 DESCRIPTION**

The majority of the area between the south property boundary and the riverbank is manmade, reclaimed land. Aerial photos show that roughly half this fill was placed between June 1950 and April 1953. The outline and slope of the shoreline present in the June 1950 photo, the earliest photo analyzed, indicates that some fill activity occurred prior to that date. Subsequent aerial photos, as late as 1971, show mounded material in the fill area but no significant increase in area [R-2].

The source of fill material and the motivation for this fill activity are unknown. The Army Corps of Engineers has no permit or other record for this fill area [T-12]. The fill material may have come from the concrete plant adjacent to TW's western boundary, which at that time was owned by the Warner Company. The Warner Company frequently dumped concrete scraps on this parcel in the early 1970s [T-8]. Boulder-sized pieces of concrete are currently present along the shoreline southwest of TW.

The concrete plant has changed ownership twice: Liberty Corp. purchased the property in 1977 and the current owners, JDM, Inc., purchased the property in 1979 [T-14]. None of these three companies has any record of filling activity along the river [T-16]. The Pennsylvania Fishing Commission, which acquired the tract containing the fill area from TW in 1979, also has no knowledge of fill activity on the site [T-12, T-13, T-14].

Except for the leased 0.9-acre parcel, shown in the aerial photographs as miscellaneous outdoor storage or parking from the mid-1950s to the present, this area is believed to have been unused by TW.

#### **3.12.2 KNOWN AND SUSPECTED RELEASES**

There is no evidence of any spills in this area except for scrap concrete from the adjacent concrete plant along the riverbank in the southwestern part of this area. Any contaminants present in the material used to fill this area would also be released to the environment over time.

### **3.13 ASBESTOS**

#### **3.13.1 DESCRIPTION**

Insulation believed to contain asbestos is present on steam piping throughout the main warehouse (Buildings 460/461), the steam plant (Building 467), and the underground piping corridor connecting the two. In 1988, a sample of the

pipe insulation from each of the two main warehouse buildings was analyzed by NDS Laboratories, Inc. for the New Cumberland Army Depot. These analyses, shown in Appendix B, confirmed the presence of chrysotile asbestos [R-7]. The pipe insulation in the basement is gouged and crumbling in several locations. Insulation is also present on hot water piping, tanks, boilers, and their flues.

The siding along the upper exterior walls of Buildings 460 and 461, on Buildings 462 and 464, on the two sentry posts, and above each loading bay [R-14] appear to contain nonfriable asbestos. The floor and ceiling tile of Building 462 may also contain asbestos. None of the siding, floors, or ceilings have been sampled.

### **3.13.2 KNOWN AND SUSPECTED RELEASES**

Asbestos releases from damaged sections of pipe insulation are likely. The siding, floors, and ceilings are largely undamaged and are less likely to release asbestos.

**SECTION 4****HUMAN AND ENVIRONMENTAL RECEPTORS**

This section discusses the potential pathways by which human and environmental receptors may be exposed to site-related chemicals.

**4.1 GROUNDWATER**

Over 90 percent of the property has been paved for as long as the Army has owned it; therefore, infiltration and percolation to the groundwater is limited. Any contaminants entering the surface soil would percolate through the 7 to 14-ft deep vadose zone to the groundwater that flows southwest into the Delaware River. The concentration of any contaminants would be attenuated by the tidal action of the river on groundwater and by the volume of the river itself. No known groundwater users are located in the vicinity of TW, and because TW is on the river, the possibility of downgradient receptors is virtually eliminated. The deep aquifer at the site may be continuous with the aquifer on the New Jersey river edge. Except for the underground tanks, which are the ESO's most likely to have caused groundwater contamination, the relatively low densities of the fuels make the possibility of deep aquifer contamination remote. Therefore, no impact on human or environmental receptors from groundwater is expected.

**4.2 SURFACE WATER**

All stormwater runoff from TW is collected by an Army-owned stormwater sewer and discharged into the Delaware River. Any past spills from aboveground tanks or transformers would have been washed into this river. The potential for any residual contamination to be present in the drainage system is greatly reduced by the AAFES practice of flushing the storm drains annually with a fire hose to improve drainage. No ongoing discharges or contamination were apparent during the site inspection. The variety of aquatic life is expected to be limited and adapted to the suboptimal environmental quality characteristic of this industrial section of the Delaware River. The river downstream of TW within 3 miles is not used for drinking water, but is used for fishing and recreational boating. Therefore, the potential for impact to human and environmental receptors from surface water is present.

**4.3 SOIL**

The unpaved soil located around the western and southern perimeters of the site does not appear to be contaminated. The ESOs with the greatest potential to have caused soil contamination are the activities along the railroad and at the 9,000-gal aboveground tanks. Because most of the site is paved, the soil should pose little inhalation or direct contact exposure to personnel in the area.

#### **4.4 AIR**

The deteriorating asbestos insulation described in Subsection 3.13 is a source of air contaminants. Inhalation of airborne asbestos fibers by employees appears to present the most significant exposure risk. No other discharges from TW affect human or environmental receptors.

**SECTION 5****CONCLUSIONS AND RECOMMENDATIONS****5.1 SUMMARY OF FINDINGS**

TW is a large urban warehouse facility built in 1943 as an armour plate assembly plant and later used for the storage of bulk quantity consumer goods. Surface water runoff, which is collected by a storm sewer, and groundwater run directly to the Delaware River immediately to the south of the facility.

Little information is available concerning past ESOs because of two time periods when the facility was inactive. In addition, several transfers in the facility's administrative accountability have occurred. More information is available for the period 1970 to 1987, when AAFES occupied the facility; however, most of this information is based on telephone interviews with a few former employees. The findings concerning ESOs, which were discussed in detail in Section 3, are summarized below.

**5.1.1 UNDERGROUND STORAGE TANKS**

TW has five underground storage tanks. The abandoned tank northwest of Building 467 appears to be filled with sand and to contain a small volume (50 to 500 gal) of liquid with a petroleum odor. This tank could possibly have been used for liquid waste disposal.

The 1,400-gal underground tank adjacent to Building 464, which contains No. 2 heating oil, was in service from 1943 to 1987. The three remaining tanks are fiberglass tanks with a capacity of 10,000 gal installed during the early 1970s within the boundaries of the former spray pond discussed in Subsection 5.1.2.

**5.1.2 FORMER SPRAY POND**

The concrete-lined spray pond was used in cooling water service during the time period when TW was an active manufacturing facility. Details regarding its operation, including the likelihood of contaminants in the cooling water, are not known.

**5.1.3 OIL/WATER SEPARATOR**

A large oil/water separator with an observable oil phase is located south of Building 467. It is believed to have been used for the discharge of boiler water blowdown, but the source of inflows are not known.

**5.1.4 ABOVEGROUND STORAGE TANKS**

The four 9,000-gal capacity tanks south of Building 467 are partially full of No. 6 heating oil and are in poor condition (heavily rusted with peeling,

crumbling insulation). Standing water inside the concrete walls surrounding these tanks was noticeably oily, which indicates either past spillage or the presence of a leak in the tanks or their piping.

The warehouse housed manufacturing activity from 1944 until probably as late as the 1950s and 1960s. However, no evidence or recollections of ESOs or disposal practices were found, other than the cooling water spray pond in conjunction with the underground storage tanks discussed in Subsection 5.1.1.

#### **5.1.5 PAST MANUFACTURING, STORAGE, AND DISPOSAL PRACTICES**

Two possible areas of concern from pre-1970 activities are contamination from camouflage paint and the storage of radiological materials. The Frankford Arsenal, of which TW was a subinstallation, did have radiological contamination at the time of its closure. No information is available concerning the possibility of radiological materials being stored at TW.

Materials known to have been warehoused after 1970 have no significant potential for environmental impact, with the exception of motor oil and anti-freeze for which the container sizes and handling practices essentially precluded an environmentally significant incident.

Immediately north of the main warehouse, pesticides, herbicides, and rodenticides were stored in a former transformer substation building. The two active transformer substations, as well as the electrical switchgear in Building 467, had their dielectric fluid replaced in the early 1980s, but have never been tested for PCBs. The two pole-mounted transformers along Princeton Avenue are suspected to contain PCBs.

The only known disposal practice of environmental significance was the use, in the early 1970s, of waste oil to suppress weeds along the railroad bed.

#### **5.1.6 FILL AREA**

More than half the land between the current TW south boundary and the river is fill material of unknown origin placed between 1950 and 1953. Ownership of this 2.9-acre tract was transferred from TW to the Pennsylvania Fishing Commission in 1979. The 0.9-acre plot within the southeast corner of TW property, which is currently leased to the Fishing Commission, was not part of the area filled between 1950 and 1953, but may have been filled at an earlier date.

#### **5.1.7 ASBESTOS**

Laboratory analysis of two steam pipe insulation samples has shown the presence of friable asbestos. Steam piping extends from the steam plant (Building 467) through the underground corridor to the main warehouse and its two basements. Other building material that may contain asbestos is present in Buildings 460, 461, 462, 464, and 467 as well as on the 9,000-gal aboveground storage tanks.

## **5.2 RECOMMENDATIONS FOR FURTHER ACTION**

No conditions were discovered that appear to represent an immediate substantial threat to human health or the environment. However, several of the ESOs do warrant further investigation, and in three instances immediate action is recommended to facilitate a subsequent site investigation. These recommendations, as well as recommendations for sites where no further investigation is needed, are listed in Table 5-1. Figure 5-1 shows the location of recommended sampling activity, except for asbestos sampling. Sampling locations are approximate and are to be determined based on field conditions.

It is recommended that all groundwater samples for TW to be obtained by piezometers rather than by permanent monitoring wells because piezometers are more cost effective when the potential need for future sampling is believed to be low.

### **5.2.1 UNDERGROUND STORAGE TANKS**

The abandoned underground storage tank northwest of Building 467 is recommended for removal and sampling of the underlying soil. The alternative recommendation of leak testing this tank was rejected because even if a leak test showed no leaks, the only way to remove the liquid with the petroleum odor from the sediment would be to remove the tank. The waste liquid should be sampled and disposed in an appropriate manner prior to removing the tank. Following removal, one sample from the soil underlying the tank should be collected for laboratory analysis.

The other four underground tanks at TW are recommended for leak testing, which will determine the appropriate follow-up action or analysis.

### **5.2.2 FORMER SPRAY POND**

A site investigation is recommended at this location, based on the possibility that during its operational period, the concrete-lined pond contained contaminants in the cooling water and may have leaked or flooded. Because the composition of possible contaminants is not known, a broad range of analyses, to include TPH, VOCs, and EP toxicity metals, is recommended. Because this former impoundment currently contains three buried 10,000-gal tanks, sampling the soil directly underneath the spray pond is not practical.

It is recommended that two soil borings be taken approximately 10 ft downgradient (to the south) of the impoundment wall and sufficiently far away from the underground tanks to avoid hitting them. The boring should extend through the concrete surface to the water table, which is expected to be less than 12 ft below the ground surface. Each soil boring should also be converted to a piezometer location for obtaining a one-time sample of the groundwater.

### **5.2.3 OIL/WATER SEPARATOR**

The primary objective of the recommended site investigation into the oil/water separator is to determine the source of all inflows and outflows. To determine



Table 5-1

ESOs Identified at Tacony Warehouse  
and Recommendations for Further Action

ESO	Action	Recommended Activity	Analysis	Number of Samples Recommended	Location/ Type of Samples
Abandoned Underground Tank	Immediate action and site investigation	Liquid disposal, tank removal, and sampling	TPH <sup>a</sup> , VOCs <sup>b</sup> , BTXE <sup>c</sup> , semivolatiles	2	Soil underlying tank and tank contents
1,400-gal Underground Tank	Site investigation	Leak test	Only if leaking	—	—
10,000-gal Underground Tanks (3)	Site investigation	Leak test	Only if leaking	—	—
Former Spray Pond	Site investigation	Sample Subsurface and groundwater	TPH, VOCs, <sup>d</sup> RCRA metals	4	Soil boring/piezometer south of former pond area
Oil/Water Separator	Immediate action and site investigation	Liquid disposal and source determination by dye test	TPH, RCRA metals, total halogens	1	Oil phase of waste liquid
9,000-gal Aboveground Tanks (4)	Immediate action and site investigation	Liquid disposal and tank removal	TPH	10	Soil boring/piezometer outside south wall, tank contents, (4) and standing liquid (2)
300-gal Aboveground Tanks	No further investigation	—	—	—	—
Former Manufacturing Area	Site investigation	Sample subsurface soil and groundwater	TPH, VOCs, RCRA metals	4	Soil boring/piezometer on both sides of the south property boundary
Former Material Storage Area	Site investigation	Geiger counter sweep	Radioactivity	N/A	Interior of Buildings 460/461 surfaces including basements

<sup>a</sup>Total Petroleum Hydrocarbons.

<sup>b</sup>Volatile Organic Compounds.

<sup>c</sup>Benzene, toluene, xylene, ethyl benzene.

<sup>d</sup>Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.  
— = Not applicable.

Table 5-1

ESOs Identified at Tacony Warehouse  
and Recommendations for Further Action  
(continued)

ESO	Action	Recommended Activity	Analysis	Number of Samples Recommended	Location/ Type of Samples
Former Pesticide Storage Building	Site investigation	Sample	Organochlorine, organophosphorous, phenoxy acid herbicides	1	Sediment in floor drain
Former Vehicle Maintenance Area	No further investigation	—	—	—	—
North Transformer Substation	Site investigation	Sample	PCBs	3	Fill fluid
South Transformer Substation	Site investigation	Sample	PCBs	4	Fill fluid and leaking conduit
Electrical Switchgear (Building 467)	Site investigation	Sample	PCBs	2	Fill fluid
Pole-Mounted Transformers	Site investigation	Sample	PCBs	2	Fill fluid
Hydraulic Oil Leak	Site investigation	Sample Spill	PCBs	1	Wipe sample of spill
Railroad Bed	Site investigation	Sample Soil	TPH, PCBs, RCRA metals	4	Surface soil (0-6 in.) along railroad
Fill Area	Site investigation	Test pits (2)	To be determined	—	0.9-acre leased tract
Asbestos	Site investigation	Sample	Asbestos	24	Ambient air in basements and steam plant; steam pipe and tank insulation; boilers and flues; siding; ceiling and floor tile

<sup>a</sup>Total Petroleum Hydrocarbons.

<sup>b</sup>Volatile Organic Compounds.

<sup>c</sup>Benzene, toluene, xylene, ethyl benzene.

<sup>d</sup>Arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

— = Not applicable.

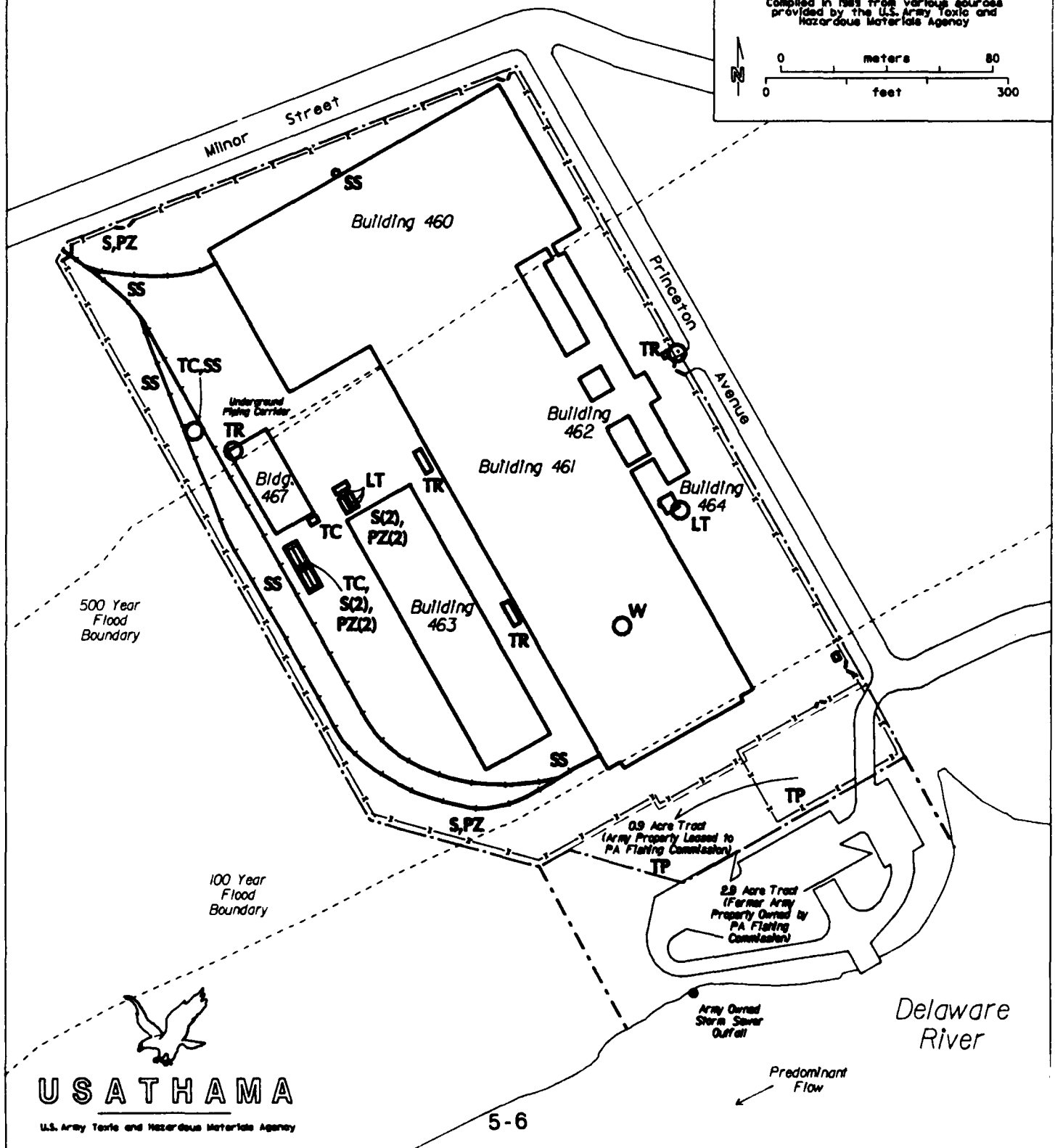
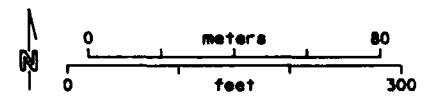
# RECOMMENDED SAMPLING METHODS

- S Soil Boring
- PZ Piezometer (Ground Water Sample)
- SS Surface Soil
- TC Tank Contents
- LT Leak Test
- TR Transformer Sample
- W Wipe
- TP Test Pit

U. S. Army  
Base Closure Preliminary Assessment  
**Tacony Warehouse**  
Philadelphia, PA - November 1989

## Figure 5-1 Recommended Sampling Locations

Compiled in 1989 from various sources provided by the U.S. Army Toxic and Hazardous Materials Agency



inflows, a dye test should be conducted of identified lines suspected to lead to the oil/water separator. If the dye tests prove inconclusive, the inlet pipe should be excavated and traced to its source. A dye test should also be performed at low tide to ascertain that the storm sewer is the outflow. This dye test investigation would require that the oil mixture currently in the separator be sampled and disposed of in an appropriate manner.

#### **5.2.4 ABOVEGROUND STORAGE TANKS**

The 9,000-gal aboveground tanks are recommended for removal for the following reasons:

- An oily film on the water surrounding the tanks indicates that one or more of the tanks or piping sections leak.
- Based on the poor condition of the tanks, the potential exists for a complete tank failure and uncontained spill.
- The tanks obstruct an inspection of the underlying concrete surface for drains or cracks through which oil could migrate to the underlying soil.
- The tanks are obsolete and should be cleared out regardless of future use of the property.

Prior to the tank removals, the liquid in each of the four tanks and inside both sets of walls surrounding the tanks should be sampled and disposed of in an appropriate manner. A total of two combined soil boring/ piezometer samples, taken approximately 1 ft downgradient (to the south) of the south wall and at one accessible location within the walls, is recommended to determine if any contamination is present from possible past spills. The soil boring and piezometer samples should be analyzed for TPH.

#### **5.2.5 PAST MANUFACTURING, STORAGE, AND DISPOSAL PRACTICES**

Little information is available regarding the exact locations of possible camouflage painting operations. Therefore, two combined soil boring/piezometer samples for RCRA metals, VOCs, and TPH are recommended at the upgradient (north) and downgradient (south) property boundary to gauge overall background and downgradient contaminant levels. Sampling for PCBs is recommended for the eight transformers at TW, the oil-filled electrical switchgear, the conduct fill fluid spill, the pesticide storage building, and the hydraulic oil leak in Building 461. Four surface soil samples along the railroad should be analyzed for TPH remaining from past waste oil disposal practices or possible spills from unloading operations as well as for PCBs and RCRA metals, contaminants frequently associated with past waste oil disposal. To screen for radiological contamination, the interior of Buildings 460 and 461 should be scanned with a Geiger counter.

### 5.2.6 FILL AREA

Other than aerial photographs, virtually no information is available about the fill area along the river; what it contains, who placed it, or why. The 0.9-acre plot is not part of the area filled after 1950, but it may have been filled at an earlier date or been contaminated by the post-1950 fill material. For this reason, two test pits are recommended for the 0.9-acre area. Test pits, 5 to 10 ft deep and approximately 10 ft long, will allow observation of this soil to determine if further investigation or analysis is warranted. The alternative of taking soil borings was rejected because: 1) this technique would provide only point information rather than information over a broader area, and 2) there would be no way to determine which contaminant analysis to conduct. A potential source of information for the fill area would be the pre-1950 aerial photographs that will show if the 0.9-acre plot was filled in during the time the Army owned the property.

The 0.9-acre tract merits special consideration because it has a high potential for disposition in the short term. The Pennsylvania Fishing Commission currently leases this property and has expressed interest in adding it to the adjacent 2.9-acre tract it acquired in 1979 [T-16]. The Fishing Commission would require some form of environmental clearance on the property transfer. No environmental assessment was performed on the 2.9-acre tract which contains the fill area created between 1950 to 1953. Depending on the findings of the initial site investigation, additional test pits or sampling in the 2.9-acre area may be desired in the future.

### 5.2.7 ASBESTOS

Recommendations for asbestos sampling are presented in Table 5-2. Based on the two insulation samples previously analyzed, asbestos is expected to be present on much of the steam piping. The objective of the site investigation is to determine the extent to which asbestos is present, especially in other types of insulation and building materials as well as its condition and airborne release potential. A total of 24 asbestos samples are recommended for the site investigation. Included in this number are samples to determine the level of asbestos in ambient air in the north and south basements of Building 461 and the steam power plant. TW is among the installations the TRADOC branch of the Army has scheduled for asbestos analysis in fiscal year 1990.

Table 5-2

## Recommendations for Asbestos Sampling

Building	Number of Samples	Sample Location
Main Warehouse (Buildings 460 and 461)	8	Steam pipe (3), hot water pipe, and boiler insulation; Transite siding; siding above loading bays; and ambient air from each basement
Steam Power Plant (Building 467)	7	Boiler, flue, steam pipe, hot water pipe, hot water tank, and roof insulation; ambient air
Administration Building (Building 462)	3	Siding, ceiling tile, and floor tile
Furnace Room (Building 464)	1	Boiler insulation
Underground Piping Corridor	2	Steam pipe insulation
9,000-gal Tanks	3	North tanks, south tanks, and piping insulation

**SECTION 6****REFERENCES****6.1 DIRECT INTERVIEWS**

- I-1 Energy Management Officer  
New Cumberland Army Depot and Plant Engineer, Tacony Warehouse  
21 September 1989 and 5 November 1989
- I-2 Environmental Coordinator  
Environmental and Natural Resources Division, Fort Dix  
21 September 1989
- I-3 Pennsylvania Department of Environmental Resources  
27 October 1989

**6.2 TELEPHONE INTERVIEWS**

- T-1 Technical Service Representative, Kuhlman Electric Co.  
25 September 1989
- T-2 Industry Services Representative, General Electric Co.  
25 September 1989
- T-3 Accountant, Water Revenue Bureau, City of Philadelphia  
25 September 1989
- T-4 Chief of Commercial and Industrial Inspection Unit,  
City of Philadelphia  
25 September 1989
- T-5 Personnel Officer  
Army/Air Force Exchange Service, Fort Gillem  
29 September 1989
- T-6 Civilian Branch  
U.S. Army Personnel Records Center  
3 October 1989
- T-7 Former Truck Traffic Dispatcher  
Tacony Warehouse, 1974-1987  
5 October 1989
- T-8 Former Maintenance Foreman  
Tacony Warehouse, 1970-1987  
5 October 1989

- T-9 Former Facility Engineer  
Frankford Arsenal and Tacony Warehouse, 1942-1971  
6 October 1989
- T-10 Chief Engineer  
Disston Precision, Inc., 1946 to present  
9 October 1989
- T-11 Former Real Property Officer  
Frankford Arsenal 1975-1976  
11 October 1989
- T-12 Environmental Specialist  
Philadelphia Branch, U.S. Army Corps of Engineers  
18 October 1989
- T-13 Engineering Manager  
Warner Co.  
19 October 1989
- T-14 Dispatcher  
JDM Inc.  
19 October 1989
- T-15 Facility Engineer  
St. Vincent's Orphanage, Tacony resident since 1930s  
19 October 1989
- T-16 Real Estate Officer  
Pennsylvania Fishing Commission  
19 October 1989
- T-17 Unit Manager  
Department of Industrial Waste, City of Philadelphia  
31 October 1989
- T-18 Former Maintenance Foreman  
Tacony Warehouse, 1970-1987  
1 November 1989

### **6.3 REPORTS AND OTHER DOCUMENTS**

- R-1 EPA Region III, Letter to Roy F. Weston, Inc., 3 November 1989.
- R-2 Thomas L. Davis and Mary D. Sitton, Environmental Photographic Interpretation Center (EPICS). Interim Report on Tacony Warehouse Base Closure Program, TS-PIC-89334, September 1989.
- R-3 Fact Sheet, Tacony Warehouse, USATHAMA, August 1989.
- R-4 Fort Dix Real Property Office, Fact Sheet, Tacony Warehouse, USATHAMA, 9 June 1989.



- R-5 Roy F. Weston, Inc. Confidential Client, Site Assessment Report, June 1989.
- R-6 Fact Sheet, Tacony Warehouse, U.S. Army Toxic and Hazardous Materials Agency, (USATHAMA), March 1989.
- R-7 NDS Laboratories Inc. Letter to Energy Management Officer, New Cumberland Army Depot, 1 March 1988.
- R-8 Chief Engineering Branch, AAFES. Memorandum to Maintenance Foreman, 17 August 1987.
- R-9 U.S.G.S. Frankford Quadrangle, 7.5 Minute Series (Topographic), 1983.
- R-10 Flood Insurance Rate Map, City of Philadelphia, Pennsylvania, Community Panel No. 420757-0015-D, Federal Emergency Management Agency, 1982.
- R-11 National Wetlands Inventory Map, Frankford Quadrangle, U.S. Fish & Wildlife Service, Scale 1:58000, April 1981.
- R-12 USATHAMA. Installation Assessment of Frankford Arsenal, Report No. 115, October 1977.
- R-13 Edward A. Tompkins. Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agriculture, Soil Conservation Service, July 1975.
- R-14 AAFES Drawing No. 0309-74-0075 "Tacony Warehouse Renovation Shipping & Receiving Areas," 10 August 1973.
- R-15 License to operate equipment venting to atmosphere, City of Philadelphia, Bureau of Licenses and Inspections, License Code 3215, License No. 6023, issued 29 December 1971.
- R-16 Wm. Evanoff, Inc. Letter to Contracting Engineer, AAFES, 15 December 1971.
- R-17 Pennsylvania Geological Survey Bulletin W-13, "Groundwater Resources of the Coastal Plain Area of Southeastern Pennsylvania," 1961.

**6.4 INDIVIDUALS WITH SIGNIFICANT KNOWLEDGE OF TACONY WAREHOUSE UNABLE TO BE CONTACTED**

Former Fire Chief, Frankford Arsenal and Tacony Warehouse.

Former Real Property Officer, Frankford Arsenal and Tacony Warehouse.

Former Construction Superintendent, Henry Disston & Sons, Inc.



## **SECTION 7**

### **PHOTOGRAPHS**

Photographs of ESOs taken during WESTON's site visit are provided in this section.



**1. INTERIOR OF BUILDING 461**



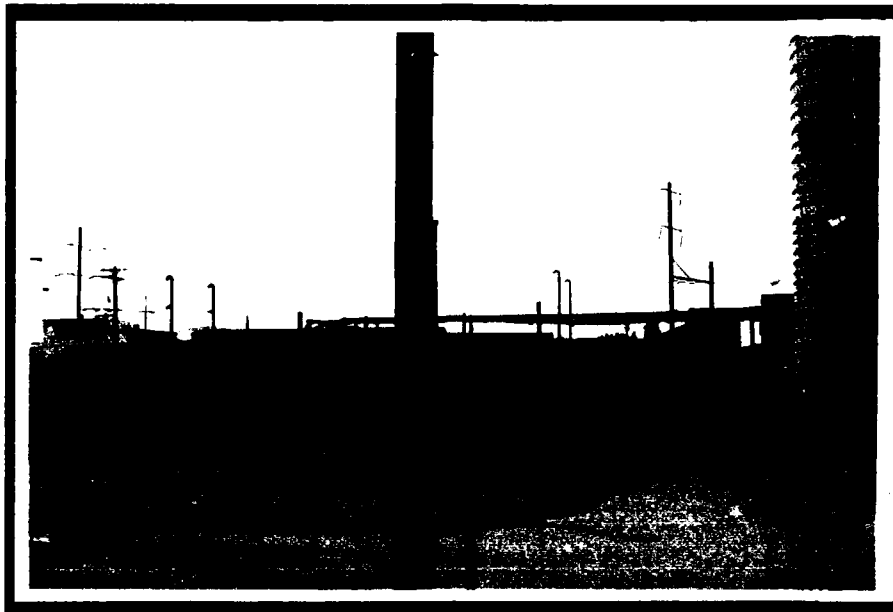
**2. FUEL PUMPS AND UNDERGROUND FUEL TANK AREA  
(IN BERMED AREA AT LEFT)**



**3. 10,000-GALLON FIBERGLASS TANK DURING  
INSTALLATION, 15 MAY 1974**



**4. TYPICAL SOIL STAINING AROUND 10,000-GALLON  
UNDERGROUND TANKS**



**5. 9,000-GALLON ABOVEGROUND TANKS (4)**



**6. CLOSE-UP OF 9,000-GALLON TANK SHOWING  
RUST AND PEELING INSULATION**



**7. LOCATION OF FORMER AIRCONDITIONING  
CONDENSER**



**8. TWO POLE-MOUNTED TRANSFORMERS  
ABOVE NORTH SENTRY POST**

**APPENDIX A**  
**SOIL BORING LOGS FROM GENERAL VICINITY**  
**OF TACONY WAREHOUSE**

1075M2-4

Boring No. MA-01  
 Client: Subcontractor: J.C. ANDERSON  
 Time/Date Began: 11:05 17-MAY-89  
 Time/Date Ended: 13:00 18-MAY-89  
 Comments: Geologist: M. Eschbacher  
 Driller: Drilling Hollow-stem Auger  
Sampling Split Spoon

SAMPLE COLLECTION INFORMATION

Depth	Graphic Log	No.	Sample Method	Depth Interval (ft.)	Recovery (ft.)	XXXX	SAMPLE DESCRIPTION	XXXX
0		1	SS	0-0.5	---	XXXX	CONCRETE AND ASPHALT PAVEMENT	XXXX
1		2	SS	0.5-2	1.5	XXXX	0.5-2.8 CLAY, YELLOW-BROWN, SANDY, MED. GR., SL. PLASTIC, WET	XXXX
2		3	SS	2-4	2.0	XXXX	2.8-4.5 CLAY, GRAY, SOME SAND, V.F. GR., PLASTIC, WET	XXXX
3		4	SS	4-6	2.0	XXXX	4.5-6.0 CLAY, ORANGE-BROWN/GRAY, SANDY, F. GR., FIRM	XXXX
4		5	SS	6-8	2.0	XXXX	6.0-7.0 SAND, GRAY, V. CLAYEY, F.-MED. GR., SAT., PROBABLY SLOUGH	XXXX
5		6	SS	8-10	1.8	XXXX	7.0-8.0 SAND, VER., GRAY, BLACK, BROWN, F.-MED. GR., SOME CLAY, FIRM, FRI.	XXXX
6		7	SS	10-12	1.8	XXXX	CLAY, GRAY-BROWN, V. SANDY, F. GR., MICACEOUS, MOIST, FIRM, SL. PLASTIC	XXXX
7		8	SS	12-14	1.5	XXXX	SAME, BUT SATURATED	XXXX
8		9	SS	14-16	0.0	XXXX	SAND, GRAY, SOME AND GRAVEL, FIRM	XXXX
9		10	SS	16-18	1.2	XXXX	NO RECOVERY	XXXX
10		11	SS	18-20	1.5	XXXX	SAND AND GRAVEL, C. GR., SOFT, SAT., GRAY-BROWN	XXXX
11		12	SS	20-22	1.8	XXXX	SAND, GRAY, C. GR., V. LITTLE CLAY, QTZ. PEBBLES, LOOSE, SAT.	XXXX
12		13	SS	22-24	0.5	XXXX	SAME	XXXX
13		14	SS	24-25	1.5	XXXX	SAME WITH COBBLES; REFUSAL AT 22.5 FT.	XXXX
14						XXXX	SAME	XXXX
15						XXXX		XXXX
16						XXXX		XXXX
17						XXXX		XXXX
18						XXXX		XXXX
19						XXXX		XXXX
20						XXXX		XXXX
21						XXXX		XXXX
22						XXXX		XXXX
23						XXXX		XXXX
24						XXXX		XXXX
25						XXXX		XXXX
26						XXXX		XXXX
27						XXXX		XXXX



Boring No. MW-04  
 Client: Subcontractor: J.C. ANDERSON  
 Time/Date Began: 09:12 22-MAY-89 Driller:  
 Time/Date Ended: 11:40 22-MAY-89 Drilling Hollow-stem Auger  
 Comments: Geologist: M. Eschbacher Sampling Split Spoon

# SAMPLE COLLECTION INFORMATION

Depth	Graphic Log	No.	Sample Method	Depth Interval (ft)	Recovery (ft.)	XXXX	SAMPLE DESCRIPTION	XXXX
0		1	SS	0-2	---	XXXX	NO SAMPLE, PAVEMENT/FILL	XXXX
1		2	SS	2-4	1.1	XXXX	SAND, MED.-F.GR., BROWN, V. LITTLE CLAY, DAMP	XXXX
2		3	SS	4-6	1.0	XXXX	SAME	XXXX
3		4	SS	6-8	0.1	XXXX	SAME	XXXX
4		5	SS	8-10	0.3	XXXX	SAME WITH SOME CLAY, MOIST	XXXX
5		6	SS	10-12	1.5	XXXX	SAME, BUT C.-MED. GR. SAND AND GRAVEL (WATER ON SPOON)	XXXX
6		7	SS	12-14	1.3	XXXX	SAME, BUT SATURATED; PEBBLES AND COBBLES PRESENT	XXXX
7		8	SS	14-16	1.2	XXXX	SAME	XXXX
8		9	SS	16-18	1.8	XXXX	SAME	XXXX
9		10	SS	18-20	2.0	XXXX	SAME	XXXX
10		11	SS	20-22	2.0	XXXX	20.0-21.5 SAME	XXXX
11		12	SS	22-24	1.0	XXXX	21.5-22.0 SILTY, V. DARK BROWN, V. PLASTIC, WOOD FRAG., MICACEOUS	XXXX
12		13	SS	24-25	0.4	XXXX	V.C. SAND, SOME CLAY, SATURATED	XXXX
13		14	SS	25-28	---	XXXX	NO SAMPLE, CUTTINGS OF SAND AND METALLIC GRAY MICA; GRAPHITE POSSIBLY PRESENT	XXXX
14						XXXX		XXXX
15						XXXX		XXXX
16						XXXX		XXXX
17						XXXX		XXXX
18						XXXX		XXXX
19						XXXX		XXXX
20						XXXX		XXXX
21						XXXX		XXXX
22						XXXX		XXXX
23						XXXX		XXXX
24						XXXX		XXXX
25						XXXX		XXXX
26						XXXX		XXXX
27						XXXX		XXXX

Boring No. MU-03  
 Client: Subcontractor: J.C. ANDERSON  
 Time/Date Began: 10:45 23-MAY-89 Driller:  
 Time/Date Ended: 15:00 24-MAY-89 Sampling Hollow-stem Auger  
 Comments: Geologist: M. Eschbacher Split Spoon

# SAMPLE COLLECTION INFORMATION

Depth	Graphic Log	No.	Sample Method	Depth Interval (ft)	Recovery (ft.)	XXXX	XXXX	SAMPLE DESCRIPTION
0		1	SS	0-2	---	XXXX	XXXX	NO SAMPLE, CUTTINGS MET IMMEDIATELY BELOW CONCRETE, THEN DRY
1		2	SS	2-4	1.2	XXXX	XXXX	2.0-2.5 SAND AND GRAVEL, LT. GRAY, DAMP
2		3	SS	4-6	1.5	XXXX	XXXX	2.5-3.2 F. GR. SAND AND SILT, BROWN, MOIST, FRIABLE
3		4	SS	6-8	1.5	XXXX	XXXX	SAND AND SILT, BROWN AND GRAY, FIRM, MOIST, SOME CLAY
4		5	SS	8-10	1.5	XXXX	XXXX	6.0-6.8 BROWN SILTY F. GR. SAND, MOIST, FRIABLE
5		6	SS	10-12	2.0	XXXX	XXXX	6.8-7.5 SILTY CLAY, ORANGE-BROWN, MOIST, SL. PLASTIC
6		7	SS	12-14	1.1	XXXX	XXXX	SAME AS 6.8-7.5 INTERVAL
7		8	SS	14-16	1.8	XXXX	XXXX	10.0-11.5 C. GR. SAND AND GRAVEL, MED. GRAY, SOME CLAY, LOOSE, SAT.
8		9	SS	16-18	0.5	XXXX	XXXX	11.5-12.0 SILTY CLAY, BROWN, SANDY, FIRM, FRIABLE, MET
9		10	SS	18-20	1.2	XXXX	XXXX	12.0-12.8 SAME AS 11.5-12.0 INTERVAL
10		11	SS	20-22	1.0	XXXX	XXXX	12.8-13.1 SAND AND GRAVEL, SOME CLAY, GRAY, SAT.
11		12	SS	22-24	1.5	XXXX	XXXX	SAND AND GRAVEL, GRAY/BROWN, LITTLE CLAY, SAT., 14.0-15.2 LOOSE, 15.2-15.8 FIRM
12		13	SS	24-25	1.0	XXXX	XXXX	C. GR. SAND, CLEAN, LIGHT BROWN; 1.0 FT. OF SLOUGH COMPOSED OF SAND AND GRAVEL, GRAY LOOSE, SAT. WITH OIL SHEEN (NMU-6PPH) ON STANDING WATER IN SPOON
13						XXXX	XXXX	SAME
14						XXXX	XXXX	SAME
15						XXXX	XXXX	SAME (NMU-3PPH IN SLOUGH)
16						XXXX	XXXX	SAME WITH SOME DARK BANDS COMPOSED OF DARK SAND GRAINS
17						XXXX	XXXX	
18						XXXX	XXXX	
19						XXXX	XXXX	
20						XXXX	XXXX	
21						XXXX	XXXX	
22						XXXX	XXXX	
23						XXXX	XXXX	
24						XXXX	XXXX	
25						XXXX	XXXX	



**APPENDIX B**  
**ASBESTOS ANALYTICAL RESULTS**  
**(as received)**

**1075M2-4**



MDS LABORATORIES  
READING  
4418 POTTSVILLE PIKE  
READING, PA. 19605  
215-921-9191

# INDUSTRIAL HYGIENE LABORATORY REPORT

\* AIHA ACCREDITATION NO. 135

## NEW CUMBERLAND ARMY DEPOT

P.O. number: DAAC69-88-M-1232

Work Order number: R022688-102

IDS client  
umber number

samples received: 02/26/88  
report date: 03/01/88

1057004 BLDG. #1

Description: homogenous, no obvious layers, fibrous, color: white/gray  
Composition: asbestos-

CHRYSTILE: >50%  
other fibrous materials-  
SYNTHETIC: 5-10%

3057005 BLDG. #2


Description: homogenous, no obvious layers, fibrous, color: white  
Composition: asbestos-

CHRYSTILE: >50%  
other fibrous materials-  
SYNTHETIC: 5-10%

Lower limit of quantification: 1% Asbestos

Analytical method: Dispersion Staining/Polarized Light Mic.

N/A: not applicable

  
Fred Usbeck, CIH  
Laboratory Director

85 MAR 08 1988